IN THE CLAIMS:

Please AMEND the claims in accordance with the following:

1. – 29. (Cancelled)

30. (Currently Amended) A parallel efficiency calculation apparatus for calculating a parallel efficiency of a parallel computer system executing a specific processing as a whole, comprising:

a first calculator calculating a load balance contribution ratio Rb(p) according to

$$R_b(p) \equiv \frac{\sum_{i=1}^{p} \tau_i(p)}{\tau(p) \cdot p}$$

by using ~~the measured~~ a processing time $\gamma_i(p)$ of a parallel processing portion within a processing executed in each said processor i, ~~said~~ a processing time $\chi_{i,j}(p)$ of each parallel performance impediment factor j within said processing executed in each said processor i and a number p of processors of said parallel computer system, wherein

$$\tau_i(p) \equiv \gamma_i(p) + \sum_{j=1}^{j_{Others}} \chi_{i,j}(p)$$

, and

$$\tau(p) \equiv \underset{i=1}{\overset{p}{Max}}(\tau_i(p))$$

;

a second calculator calculating a virtual parallelization ratio $R_p(p)$ ~~representing a ratio, with respect to time, of a portion processed in parallel by said respective processors executed in said parallel computer system~~ according to

$$R_p(p) \equiv \frac{\sum_{i=1}^{p} \gamma_i(p)}{\tau(1)}$$

by using ~~the measured~~ said processing time $\gamma_i(p)$, ~~said processing time $\chi_{i,j}(p)$ and a~~ said number p of processors of said parallel computer system, ~~wherein~~ and $\tau(1)$, which is substantially equivalent to a processing time in case where only one processor executes said specific processing;

a third calculator calculating a parallel performance impediment factor contribution ratio Rj(p) according to

$$R_j(p) \equiv \frac{\sum_{i=1}^{p} \chi_{i,j}(p)}{\sum_{i=1}^{p} \tau_i(p)}$$

by using ~~the measured processing time $\gamma_i(p)$,~~ said processing time $\chi_{i,j}(p)$ and [[a]] said number p of processors of said parallel computer system; and

a fourth calculator calculating a parallel efficiency by using said load balance contribution ratio, said virtual parallelization ratio, and said parallel performance impediment factor contribution ratio; and

a display device displaying the calculated parallel efficiency[[,]]

~~wherein a load is unbalanced among said respective processors included in said parallel computer system~~.

31. – 34. (Cancelled)

35. (Currently Amended) A computerized parallel efficiency calculation method for calculating a parallel efficiency of a parallel computer system executing a specific processing as a whole, said computerized parallel efficiency calculation method comprising:

measuring, in each processor i of said parallel computer system, a processing time $\gamma_i(p)$ of a parallel processing portion within a processing executed in each said processor, and a processing time $\chi_{i,j}(p)$ of each parallel performance impediment factor j within said processing executed in each said processor;

calculating a load balance contribution ratio Rb(p) according to

$$R_b(p) \equiv \frac{\sum_{i=1}^{p} \tau_i(p)}{\tau(p) \cdot p}$$

by using the measured processing time $\gamma_i(p)$, said processing time $\chi_{i,j}(p)$ and a number p of processors of said parallel computer system, wherein

$$\tau_i(p) \equiv \gamma_i(p) + \sum_{j=1}^{j_{Others}} \chi_{i,j}(p)$$, and

$$\tau(p) \equiv \underset{i=1}{\overset{p}{Max}}(\tau_i(p))$$;

calculating a virtual parallelization ratio $R_p(p)$ ~~representing a ratio, with respect to time, of a portion processed in parallel by said respective processors executed in said parallel computer system~~ according to

$$R_p(p) \equiv \frac{\sum_{i=1}^{p} \gamma_i(p)}{\tau(1)}$$

by using the measured processing time $\gamma_i(p)$, ~~said processing time $\chi_{i,j}(p)$ and a~~ said number p of processors of said parallel computer system, ~~wherein~~ and $\tau(1)$, which is substantially equivalent to a processing time in case where only one processor executes said specific processing;

calculating a parallel performance impediment factor contribution ratio $R_j(p)$ according to

$$R_j(p) \equiv \frac{\sum_{i=1}^{p} \chi_{i,j}(p)}{\sum_{i=1}^{p} \tau_i(p)}$$

by using ~~the measured processing time $\gamma_i(p)$,~~ said processing time $\chi_{i,j}(p)$ and [[a]] said number p of processors of said parallel computer system; and

calculating a parallel efficiency by using said load balance contribution ratio, said virtual parallelization ratio, and said parallel performance impediment factor contribution ratio; and

outputting the calculated parallel efficiency to a display device[[,]]

~~wherein a load is unbalanced among said respective processors included in said parallel computer system~~.

36. (Currently Amended) A computer readable storage medium embodying a program for causing a computer to execute operations calculating a parallel efficiency of a parallel computer system executing a specific processing as a whole, said operations comprising:

calculating a load balance contribution ratio Rb(p) according to

$$R_b(p) \equiv \frac{\sum_{i=1}^{p} \tau_i(p)}{\tau(p) \cdot p}$$

by using ~~the measured~~ a processing time $\gamma_i(p)$ of a parallel processing portion within a processing executed in each said processor i, ~~said~~ a processing time $\chi_{i,j}(p)$ of each parallel performance impediment factor j within said processing executed in each said processor i and a number p of processors of said parallel computer system, wherein

$$\tau_i(p) \equiv \gamma_i(p) + \sum_{j=1}^{j_{Others}} \chi_{i,j}(p)$$, and

$$\tau(p) \equiv \underset{i=1}{\overset{p}{Max}}(\tau_i(p))$$;

calculating a virtual parallelization ratio $R_p(p)$ ~~representing a ratio, with respect to time, of a portion processed in parallel by said respective processors executed in said parallel computer system~~ according to

$$R_p(p) \equiv \frac{\sum_{i=1}^{p} \gamma_i(p)}{\tau(1)}$$

by using ~~the measured~~ said processing time $\gamma_i(p)$, ~~said processing time $\chi_{i,j}(p)$ and a~~ said number p of processors of said parallel computer system, ~~wherein~~ and $\tau(1)$, which is substantially equivalent to a processing time in case where only one processor executes said specific processing;

calculating a parallel performance impediment factor contribution ratio Rj(p) according to

$$R_j(p) \equiv \frac{\sum_{i=1}^{p} \chi_{i,j}(p)}{\sum_{i=1}^{p} \tau_i(p)}$$

by using ~~the measured processing time $\gamma_i(p)$,~~ said processing time $\chi_{i,j}(p)$ and [[a]] said number p of processors of said parallel computer system; and

calculating ~~and outputting to an output device,~~ a parallel efficiency by using said load balance contribution ratio, said virtual parallelization ratio, and said parallel performance impediment factor contribution ratio; and

outputting the calculated parallel efficiency to a display device[[,]]

~~wherein a load is unbalanced among said respective processors included in said parallel computer system~~.